

REMARKS/ARGUMENTS

Reconsideration of this application is requested. Claims 38, 40-43, 47-58 and 75-88 are in the case.

I. SPECIFICATION

A new Abstract is presented on a separate sheet attached to this response. The Abstract is based on that appearing on the front face of the corresponding published WO International Application. No new matter is entered.

II. THE 35 U.S.C. §112, FIRST PARAGRAPH, REJECTION

Claims 38, 40-43, 47-48 and 76-82 stand rejected under 35 U.S.C. §112, first paragraph, as allegedly containing subject matter which was not described in the specification in a way as to reasonably convey to one skilled in the relevant art that the inventor, at the time the application was filed, had possession of the claimed invention. That rejection is respectfully traversed.

The present invention discloses a new way of making functionalized resins available for use in methods of synthesis. The specific examples in the specification show how, in the porous device, the resins are still available for use in methods of synthesis, notwithstanding the fact they are part of a sintered arrangement. For example, the specific examples disclose how the resin may still be derivatized (Example 7); how compounds may be prepared on the resins (Examples 8 and 9); how certain types of experiments may be undertaken on the resins (Examples 10 to 12); how the

resins may be washed (Example 13); and how the resin may be used to prepare libraries of compounds (Examples 17 to 19).

Thus, the examples illustrate how the resin is available for use in chemical reactions notwithstanding the fact it is incorporated in a porous device of the type described in the specification. The skilled person is thereby taught to use the porous device in situations where he/she used functionalized resins in methods of synthesis prior to the present invention.

It will also be appreciated that the claims in the present application, for example claim 38, describe a method of synthesis whereby a bond is formed between an active material and a first reagent using a porous device. A material is thereby synthesized and this applies irrespective of whether the synthesized material is cleaved from the porous device or not.

Moreover, preferred embodiments of the present invention utilize known resins (see the resins disclosed at page 33 line 21 onwards of the specification). Such resins are well-known for use in methods of synthesis. A skilled person is fully aware how to use such resins in methods of synthesis.

It is well established that a patent applicant does not have to teach what is already known to those of skill in the art. An advantage of the invention is that it provides a porous device which can be used to carry out known reactions using known resins. Use of such resins is well within the knowledge of one of ordinary skill in the art. In fact, porous devices in accordance with preferred embodiments of the invention are in commercial use and are promoted without the need for any explanation on how they may be used beyond what is disclosed in the application. In this regard, the Examiner's

attention is directed to the attached extracts from the website of the applicant's licensee which describe the porous devices and also an advert for "novel encapsulated resin devices" which relates to the porous devices. It will be appreciated that a skilled person will appreciate immediately on reading such literature how to use the devices and the advantages which will result from such use.

The applicant was clearly in possession of the invention as claimed when the application was filed. Withdrawal of the outstanding 35 U.S.C. §112, first paragraph, rejection is respectfully requested.

III. THE ANTICIPATION REJECTION

Claims 38, 40-43, 47-56, 76, 77, 79 and 81-82 stand rejected under 35 U.S.C. §102(b) as allegedly anticipated by WO 98/41534 (Biosepra, Inc.). That rejection is respectfully traversed.

The invention provides a method of synthesis using a porous device comprising a body having an internal region which is porous, wherein a multiplicity of particles of an active material comprising a resin are entrapped within the internal region and held in position by a physical weld. The method comprises contacting the porous device with a first reagent under conditions which cause the first reagent to react with the active material, so that a bond is formed between the active material and the first reagent or a fragment thereof.

Biosepra does not anticipate the invention as claimed. Biosepra highlights the problem of using polymeric resins such as polystyrene beads (see page 3 line 1 onwards) and, thus teaches against the use of resins. The solution to the problem

addressed by Biosepra is to derivatize the surface of ceramic particles (see, page 4 line 7); or to fill the pores in ceramic particles with a three-dimensional pore filling polymer network (see, page 4 line 9 onwards). This three dimensional pore filling polymer network is prepared by polymerization of a mixture comprising monomers, etc (see, page 4 line 17 onwards).

Biosepra takes a preformed ceramic material and then post fills the pores. These pores are not filled with particles but are filled with a polymer network. This polymer network is prepared, for example, as described in Example 5 in Biosepra, by selecting dry ceramic particles and then causing reagents arranged to prepare a polymer to be "absorbed by capillary action into the pore volume" (see, page 32 line 6).

It will be appreciated that there are no resin particles of a type which are "held in position by a physical weld" within the ceramic particles of Biosepra. Thus, claim 38 and each dependent claim thereon are clearly novel over Biosepra.

The Examiner has referred to page 15 lines 22 to 29 of Biosepra to suggest that "the pores of the porous ceramic solid support comprises particles such as polymeric resins...". However, the cited passage makes it clear that a polymer is formed in the pores by a polymerization process. It is also stated "that some processes may result in coating of the particles with the polymer". Thus, it is clear that the process produces a network of polymeric material, rather than individual particles of any polymeric material.

In light of the above, it is clear that the outstanding anticipation rejection should be withdrawn. Such action is respectfully requested.

For completeness, it is believed that the claims of the present application are not only novel but are also not obvious over Biosepra. In this regard, as noted above,

Biosepra is specifically directed at avoiding the use of resins. Furthermore, one cannot imagine how particles could be entrapped by a physical weld using the procedure described in Biosepra. In this regard, it is noted that Biosepra produces a pore filling polymer network (see, page 4, line 9 onwards).

Advantageously, a method in accordance with preferred embodiments of the present invention allows a substantial surface area of each particle to be exposed and available for use in chemical reactions (see the figures in the present specification). This is believed to be superior to the arrangement of Biosepra wherein a continuous network of polymer is formed within porous particles to substantially fill the pores. It is believed that much of the polymer formed in Biosepra will be unavailable for chemical reactions. The presently claimed invention is therefore clearly novel and non-obvious over Biosepra.

IV. THE OBVIOUSNESS REJECTION

Claims 38, 40-43, 47-58 and 75-82 stand rejected under 35 U.S.C. §103(a) as allegedly unpatentable over U.S. Patent 5,770,358 to Dower et al and U.S. Patent 5,834,121 to Sucholeiki et al. That rejection is respectfully traversed.

Dower discloses at column 11 lines 31 to 45 various possible solid supports including glass, latex, polystyrene, gold or other colloidal metal particles. The specific examples in Dower describe syntheses on the surface of glass beads (see Examples 1 and 2) or carboxyl beads (see Example 3). Subsequent examples in the case are concerned with stochastic methodologies. It will be appreciated that none of the examples in Dower discloses even the use of porous beads. In Dower, reactions are

carried out on the surface of beads, rather than on “a multiplicity of particles of an active material [which] are entrapped within the internal region in pores of said porous support means”, as described in claim 75.

Sucholeiki describes at column 2 line 43 onwards beads which comprise primary particles, each of which is a polymer coated or polymer encapsulated metal oxide that has inducible magnetic properties; and a mesh or matrix comprising a thermoplastic polymer resin that is microporous and which is capable of swelling or expanding in organic solvent, wherein the primary beads are randomly distributed through the matrix. It will be noted that, in Sucholeiki, the polymer encapsulated metal oxide that has inducible magnetic properties is not arranged to be functionalized in chemical reactions. It is the microporous matrix which is functionalized according to Sucholeiki. Thus, Sucholeiki does not describe “a multiplicity of particles of an active material” which are entrapped as described in claim 75, wherein a method of synthesis includes “the step of contacting said porous device with a first reagent under conditions which cause said first reagent to react with said active material...”. In Sucholeiki, there is no reaction with the magnetic particles, only with the matrix.

Thus, neither Dower nor Sucholeiki describes or suggests a reaction with an active material of the type described in claim 75. Even if a skilled person combined the disclosures in the two documents (it is believed that a person of ordinary skill would not have been motivated to combine these disclosures), the subject matter of claim 75 would not have resulted or have been rendered obvious thereby.

As noted above, there would have been no motivation to combine Sucholeiki with Dower. There is no motivation in Sucholeiki to make the magnetic particles readily

available to functionalization in a method of synthesis. In this regard, it is noted that the particles of Sucholeiki are formed in a polymerization process (core shell), so they are bound in position and their surface area is substantially reduced. However, in Sucholeiki, the reduction in surface area is not a concern, since the major objective of Sucholeiki is to ensure that the magnetic particles are held in position, rather than they are available for carrying out chemical reactions.

In summary, Dower and Sucholeiki do not, individually or together, describe or suggest the features of claim 75 and, in any event, there would have been no motivation to combined the disclosures of the two documents to arrive at the combination of claim 75. Absent any such motivation, it is clear that a *prima facie* case of obviousness has not been generated in this case. Reconsideration and withdrawal of the outstanding obviousness rejection are accordingly respectfully requested.

V. COMMERCIAL SUCCESS

The present invention has enjoyed commercial success. As indicated in the papers attached hereto, the invention has been licensed to Polymer Laboratories. Should the Examiner wish to receive the subject matter of the attachments in declaration form, it is requested that the undersigned be so advised.

VI. NEW AND AMENDED CLAIMS

New claims 83-88 are presented. Claim 83 is supported at page 14, line 18. Claim 84 is supported at page 13, first paragraph. Claim 85 is supported at page 13, lines 1-19. Claim 86 is supported at page 34, line 33 and page 15 line 12. Claim 87 is

KOBYLECKI
Appl. No. 09/807,504
December 4, 2003

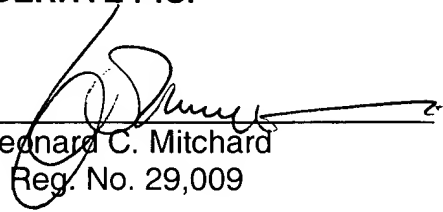
supported at page 34, line 33 and page 15 line 12. Claim 88 is supported at page 2, line 26 and page 4 line 1. Claim 38 has been amended to specify that the active material comprises a resin. Basis appears at page 12 line 30. No new matter is entered.

Allowance of the application is awaited.

Respectfully submitted,

NIXON & VANDERHYE P.C.

By: _____


Leonard C. Mitchard
Reg. No. 29,009

LCM:lfm
1100 North Glebe Road, 8th Floor
Arlington, VA 22201-4714
Telephone: (703) 816-4000
Facsimile: (703) 816-4100
Attachments: Extracts from Polymer Laboratories website

ABSTRACT OF THE DISCLOSURE

A porous device for use in a method of synthesis. The device includes a body having an internal region which is porous wherein an active material, for example a solid support resin, is entrapped within the internal region.